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ABSTRACT

The D-48 Test, a nonverbal intelligence test, was administered to 239 third and fourth graders identified as culturally disadvantaged. Four of 124 third graders and 13 of 115 fourth graders were selected as gifted by the D-48 Test according to standards established through a preliminary investigation. The Standard Progressive Matrices (SPM), Piagetian Assessment Tasks (PAT), and the Stanford Binet Intelligence Test (SBIT) were then administered to the children who had been identified as gifted by the D-48 Test. Results indicated that all children identified as gifted by the D-48 Test were also identified by PAT. All third graders and 76.9% of the fourth graders were also identified as gifted by SPM. However, only 50% of the third graders and 7.6% of the fourth graders were chosen as gifted by SBIT. Results supported the anticipated outcome that the SBIT would not be useful in selecting disadvantaged gifted children. The D-48 Test, on the other hand, appeared to represent a viable screening instrument for identifying disadvantaged gifted children. (Author/CL)

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USE OF THE D-48 TEST TO IDENTIFY GIFTED DISADVANTAGED THIRD- AND FOURTH-GRADE ELEMENTARY SCHOOL CHILDREN

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Abstract

The D-48 Test, which is a non-verbal intelligence test, was administered to all third and fourth grade children (N = 239) whose family incomes were less than $8,940 per year in four elementary schools. This group was identified as culturally disadvantaged. Four out of 124 third graders and 13 out of 115 fourth graders were selected as gifted by the D-48 Test according to standards established through a preliminary investigation.

The Standard Progressive Matrices (SPM), Piagetian Assessment Tasks (PAT), and the Stanford-Binet Intelligence Test (SBIT) were administered individually to the children selected by the D-48 Test as gifted.

Results indicated that all the children who were identified as gifted by the D-48 Test were also identified by PAT. All the third graders and 76.9% of the fourth graders were also selected by SPM as gifted. On the other hand, only 50% of the third graders and 7.6% of the fourth graders were chosen as gifted by SBIT. The results supported the anticipated outcome that the SBIT was not useful for selecting disadvantaged gifted children. However, the measure under investigation, the D-48 Test, represented a viable screening instrument for identifying disadvantaged gifted children.

USE OF THE D-48 TEST TO IDENTIFY GIFTED DISADVANTAGED THIRD- AND FOURTH-GRADE ELEMENTARY SCHOOL CHILDREN

Identifying disadvantaged gifted children presents a challenge to educators because of the lack of proper methodology. Many different identification procedures have been suggested to select gifted children (French, 1946; Laycock, 1957; Martinson & Lessinger, 1963). Common factors in the suggested identification procedures were the use of a group intelligence test followed by an individual intelligence test often accompanied by teacher observation and recommendations. Other suggested supplemental measures were the use of aptitude, interest, and personality test results.

Studies concerning disadvantaged children indicate they have a tendency to display a variety of linguistic disabilities such as limited vocabularies and nonstandard grammar (Hunt, 1964). Renzulli (1973) stated that "One of the major characteristics of the disadvantaged is the failure to master linguistic and grammatical structures of the dominant culture. For this reason it is necessary to develop identification strategies which are not language dependent" (p. 438). Although it has been observed that the disadvantaged children have usually lacked verbal abilities, practices for identification of the gifted are designed primarily to furnish increased opportunities for verbally gifted students in the elementary and secondary schools. In spite of all the research recommendations, verbal intelligence tests are the most predominant method for identification of the gifted.

Many school systems have adopted various types of identification procedures based upon the recommendations and/or requirements of the state without considering its applicability for the disadvantaged population. The practices of identifying the gifted differ in each state. For example, in the State of Alabama, a teacher or parent referral, or both, and a score of 130 on the SBIT are required in order to be selected for the gifted program. For all practical purposes, the term gifted child has become synonymous with the child who can score above two standard deviations on an individual intelligence test. In addition, this kind of screening requirement assumes that the intelligence tests used represent an adequate sample of mental abilities and cognitive processes. The disadvantaged child may require identification procedures which differ from those used with children from higher socioeconomic groups.

The purpose of this study was to investigate the potential of the D-48 Test for identifying gifted disadvantaged third- and fourth-grade elementary school children. The approach used was a two-staged, essentially nonverbal, procedure that identified gifted disadvantaged children and used other measures to verify the results.

Method

Subjects

Subjects were drawn from four elementary schools in a small rural school system whose family incomes were lower than $8,940 per year. The children from this income group were eligible for free lunch and were considered as disadvantaged by the county. There were 239 children

from both sexes in third and fourth grades and from all racial backgrounds. There were 67 males and 57 females in the third grade and 66 males and 49 females in the fourth grade.

Measures

Four tests were used in this study. They were as follows: D-48 Test, Standard Progressive Matrices (SPM), Piagetian Assessment Tasks (PAT), and the Stanford-Binet Intelligence Test (SBIT).

The D-48 Test (Black, 1963) is a nonverbal test designed to measure intelligence and has been used primarily in Europe. It includes 44 domino problems with four practice examples and displays a pictured arrangement of items containing four to 14 dominoes. The examinee is provided with an answer sheet showing the arrangement of dominoes, with the last domino in each series left blank for the examinee to complete by supplying the proper numbers in each half of the domino. There are no multiple-choice items; therefore all answers must be supplied by the subject responding to the test.

The test has been used with diverse subject populations from elementary grades through graduate college students over the past 17 years (Gough & Domino, 1963; Domino, 1964; Cantwell, 1966; Boyd & Ward, 1966, 1967; Welsh, 1966, 1967; Karnes, 1968; Chissom & Lightsey, 1971; McLaurin, Pendergrass, & Kennedy, 1973; Chissom & Hoenes, 1976). Several studies of the D-48 Test (Boyd & Ward, 1967; Chissom & Lightsey, 1971; Chissom & Hoenes, 1976) have reported reliability estimates of .91, .92, .88, and .93 respectively.

No norms have been established for third- and fourth-grade children as the test manual reports information for fifth grade and above. There are, of course, no standards by which to judge giftedness based on test performance. In an effort to determine the ability of the D-48 Test to discriminate between gifted and nongifted children, a pilot study was conducted (Haznedar, 1980). Results indicate that third graders who scored 18 or above and fourth graders who scored 20 or above on the D-48 Test could be considered gifted. These values correspond to the average score of the norm samples at the fifth and sixth grade or two grades above the child's present grade level.

The Standard Progressive Matrices (SPM) (Raven, 1976) is a nonverbal intelligence test designed for ages 8 to 65. It consists of 60 drawn patterns divided into five sets of 12 problems each. The subject is required to complete a series of missing parts by choosing one of six possible alternatives presented. Internal consistency reliabilities range from .90 to .91 (Banks & Sinka, 1951) for subjects under 20 years. Test-retest reliability values range from .83 to .93 with the higher values being associated with younger subjects (Raven, 1948). This test was chosen to verify the results of the D-48 Test and to provide additional information for the identification of the gifted. Because most of the previously suggested identification procedures for the gifted excluded the developmental aspect of giftedness, Piagetian Assessment Tasks (PAT) were selected for use in this study. These tasks were developed according to descriptions provided by Wadsworth (1978). Criteria used for assessment of these tasks were adopted

from Strauss (1972) and were the required criteria for the use of Piaget's clinical interview to determine the child's level of reasoning. An investigation concerning the developmental levels of those children who were identified by the D-48 Test as gifted was necessary to determine if the selected children also performed in the gifted range on a set of developmental tasks.

PAT are a set of tasks designed to reflect the sequence in which children acquire knowledge. These tasks assess reasoning ability with respect to concepts children have learned (Elkind, 1971). In this study, these tasks were used, not as a test, but only to determine a child's dominant stage of functioning in terms of Piaget's Cognitive Developmental Stages. Previous research (Brunner, Oliver, & Greenfield, 1966) indicates that a consistency exists across different cultures in which children attain levels and types of logical thought. The order in which the concepts are acquired is almost perfect, despite cultural differences. Gollishian, Hinkelman, and Walsworth (1971) indicated that these tasks reveal no sex differences and that the developmental process proceeded at about the same rate in both sexes.

The Stanford-Binet Intelligence Test (SBIT) (Terman & Merrill, 1972) was used to determine whether children who were selected as gifted by nonverbal measures and tasks as gifted would score in the gifted range (130 or above) on this test. It is also the criterion used by the State of Alabama to identify children who are eligible for gifted programs.

Data Collection

The D-48 Test was administered to all students identified as disadvantaged in four elementary schools. The following week the SPM, SBIT, and PAT were administered individually to the group of children who were identified as gifted by the D-48 Test.

Results

The means and the standard deviations of the third and fourth graders, who were identified, and who were not identified as gifted by the D-48 Test are presented in Table 1. The data in the table show the difference in the mean scores of the third and fourth graders who were identified as gifted and those who were not.

Insert Table 1 about here

Table 2 contains the percentage of children identified as gifted by the D-48 and SPM from the population tested. Results show that 3.23% of the third and 11.3% of the fourth graders tested were identified as gifted by the D-48 Test.

Insert Table 2 about here

All the third graders who were identified as gifted by the D-48 Test were also selected by the SPM. In addition, 83.3% of the gifted females and 71.4% of the gifted males in the fourth grade were selected as gifted by SPM.

The results of the PAT showed that all the children from the third and fourth grades who were identified as gifted by the D-48 Test were also identified as gifted by PAT. The third graders successfully performed the tasks which are designed for children with a mental age of 11. The fourth graders performed the tasks which are designed for children with a mental age of 12.

Table 3 shows the percentages of children who were identified as gifted by the SBIT and the D-48. Only 50% of the gifted children in third grade and 7.6% of the gifted children in fourth grade were identified as gifted by the SBIT.

Insert Table 3 about here

Discussion

This study was designed to test a procedure for the identification of disadvantaged third- and fourth-grade gifted children. Results indicated that the criteria set for selecting gifted third and fourth graders with the D-48 Test were appropriate and that the D-48 is useful as a measure for identifying gifted third- and fourth-grade elementary school children. These results were further supported by results obtained from the SPM and PAT. It would seem that a combination of these three nonverbal measures offers possibility for identification of the disadvantaged gifted.

No selection criterion for choosing gifted children by the PAT tasks was available, and the following criterion is suggested to guide future users of the PAT tasks. Based on the results obtained from this study, third and fourth graders who successfully perform the PAT tasks designed for children who are two years above their chronological age can be selected as gifted.

The SBIT did not identify this group of disadvantaged gifted children as well as the other measures. Since the SBIT is a verbal test, this result was expected for low socioeconomic groups which historically have lacked verbal skills to perform well on the SBIT. Based on this information, it may be concluded that the SBIT was not a viable measure in identifying disadvantaged gifted children in grades 3 and 4.

The identification procedures for selecting gifted disadvantaged children in this study yielded results that were consistent with the literature reviewed. However, this study should be duplicated in similar environments to provide a further check on the generalizability of these results.

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Table 1

Means and Standard Deviations of the Third and Fourth Graders Who Were and Were Not Identified as Gifted by the D-48 Test

Grade	Not identified as gifted by the D-48 Test			Identified as gifted by the D-48 Test		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD
Third						
Males	64	7.03	3.52	3	22.0	3.27
Females	56	6.83	3.60	1	22.0	0
Total	120	6.93	3.56	4	22.0	2.83
Fourth						
Males	59	8.81	4.62	7	23.0	2.73
Females	43	7.72	5.03	6	20.5	.76
Total	102	8.35	4.80	13	21.9	2.41

Table 2

Comparison of the Frequency and Percentage of Third and Fourth Graders Identified as Gifted by the D-48 Test and SPM

Grades	Total number tested	Identified as gifted by D-48		Identified as gifted by SPM	
		Frequency	Percentage	Frequency	Percentage
Third					
Males	67	3	4.48	3	100
Females	57	1	1.80	1	100
Total	124	4	3.23	4	100
Fourth					
Males	66	7	10.6	5	71.4
Females	49	6	12.24	5	83.3
Total	115	13	11.3	10	76.9

Table 3

Frequency and Percentage of Third and Fourth Graders Who Were Identified as Gifted by the Stanford-Binet Intelligence Test (S-B)

	N	Number identified by D-48	Number identified by S-B
Third grade			
Males	3	3	1 (33)[1]
Females	1	1	1 (100)
Total	4	4	2 (50)
Fourth grade			
Males	7	7	1 (14.2)
Females	6	6	0 (0)
Total	13	13	1 (7.6)

[1]Numbers in parentheses indicate the percentage of children who were identified as gifted by S-B